

Space News Roundup

Two new abort landing sites readied in Africa

Preparations are under way to bring on line two new abort landing sites in north-western Africa. These sites will be used as contingency landing facilities in the event of a transatlantic abort during the launch of STS-26 and subsequent missions.

The new sites are located near Ben Guerir (40 miles north of Marrakech), Morocco, and Banjul, The Gambia. Ben Guerir, a former U.S. Strategic Air Command base abandoned in 1963, has a 14,000-foot runway. Banjul, with an 11,800-foot runway, currently serves The Gambia as its international airport.

At Ben Guerir, construction to rejuvenate the surface of the runway has begun. In addition, foundations for Shuttle approach and landing aids are being laid at the new sites. Construction at both new sites will include an operations and storage building.

Kennedy Space Center is preparing to ship support equipment to the new locations. Each location will receive about 10 personnel transportation vehicles, a microwave landing system, four sets of Position Approach Path Indicator (PAPI) lights, two sets of Ball/Bar lights, two sets of flashing strobe lights,

generators for power, portable satellite communications systems, automated weather stations and other support equipment and tools. Ben Guerir will receive additional firefighting equipment.

Robert Fleming, KSC's contingency landing site program manager, said, "These sites must be operational and all requirements met in time for the next mission. We hope we never have to use them. But, they will be ready."

Crowley Marine of Jacksonville, Fla., has been contracted to transport the equipment

via ocean-going barge and tug. The barge departed the KSC turn basin March 4.

The total number of transatlantic abort sites comes to four with the addition of these new sites and the continued use of sites at Zaragoza Air Base and Moron Air Base in Spain.

The Ben Guerir, Banjul and Moron sites will be manned with 30 to 40 NASA and contractor personnel during the launch of STS-26.

Negotiated agreements with each country allows NASA the use of the existing facilities.

Shuttle-Station integration job goes to Parker

By Jeff Carr

Veteran astronaut Robert A.R. Parker has been assigned temporary duty in the Office of Space Flight at NASA Headquarters, effective immediately.

Parker will serve as director of the Space Flight/Space Station Integration Office, reporting directly to the associate administrator for space flight, Rear Adm. Richard H. Truly.

The Space Flight/Space Station Integration Office was established in 1987 to facilitate the integration of the Space Station and its unique requirements into the Space Transportation System. The office coordinates the exchange of information between the two programs and serves as a forum for presenting and resolving technical and programmatic issues.

Parker will remain eligible for crew assignment.

Prior to his selection as a scientist-astronaut in 1967, Parker was an associate professor of astronomy at the University of Wisconsin. After joining NASA, he served as a member of the astronaut support crews for Apollo 15 and 17. Parker also served as program scientist during the three manned Skylab missions. In November and December of 1983, he made his first space flight as mission specialist on STS-9, the first Shuttle/Spacelab mission.

He has received the NASA Exceptional Scientific Achievement Medal (1973) and the NASA Outstanding Leadership Medal (1974).

Parker replaces former director E. William Land who retired.

Emblem gets new look

The look of the new Mission Operations Directorate (MOD) emblem has changed and its focus has expanded, but the message is the same.

The primary change involves the central words of the emblem, which have been updated to "Mission Operations" from "Mission Control" to recognize everyone in MOD who contributes to spaceflight. A large sigma still represents the total mission team and the individual flight control teams of the past, present and future.

A comet, representing those who have given their lives for space exploration and serving as a reminder of the risks inherent to spaceflight,

has replaced the Saturn launch vehicle.

The border motto "Res Gesta Per Excellantiam," Latin for "Achievement through Excellence," still stresses the positive attitude used by the mission control team to assure crew safety and mission success. The border also retains three symbols representing the Mercury, Gemini and Apollo programs, and four stars that represent the basic principles of the flight control team; discipline, morale, toughness and competence.

The original emblem was designed by Robert T. McCall in 1973. In 1983, a Space Shuttle was added to reflect MOD's role in that program.



JSC Photo by Pete Stanley

A Navy parachutist slides down a prototype of the crew escape pole being tested for emergency use on the Space Shuttle.

Decision expected soon

Crew escape pole works for jumpers

By Barbara Schwartz

Navy parachutists made nearly 60 successful jumps using a prototype Space Shuttle crew escape pole during recent tests over Edwards Air Force Base, Calif.

JSC engineers were to have completed the developmental test phase for the crew escape pole by today. There were a total of 16 tests with six Navy parachutists jumping from a C-141 aircraft traveling at Shuttle air speeds and an altitude of 10,000 feet.

Objectives of the tests were to establish the feasibility of the pole concept for crew egress and to determine the margins on Orbiter wing clearance. A telescoping pole is one of two escape systems being evaluated—the other is a tractor rocket extraction system.

"Preliminary results look promising," said Bill Chandler, Shuttle crew escape system manager. "It is possible that a decision could be made later this month."

For the tests, a fixed curved pole was extended through a hatch-like opening in the C-141. Tests were conducted using both a 9 and a

12-foot steel pole extension to determine whether the longer pole provides more clearance. The pole comes equipped with low-friction lanyards, and the jumpers attach a lanyard to their parachute harness and jump from the vehicle, sliding down and dropping off the end of the pole. After about five seconds, the parachute automatically opens and the parachutist floats to the drop zone.

Tests began at airspeeds of 130 knots and graduated to Shuttle air speeds of 200 knots. Instrumentation and photographic data will be evaluated during the next few weeks before recommendations are made to Shuttle program managers.

The escape methods are limited to use during a contingency abort situation or possibly a reentry landing emergency. If two or three Shuttle main engines were lost during ascent, the crew would bring the vehicle to a controlled gliding flight after separation from the solid rocket boosters and the external tank. When the orbiter reached

(Continued on page 2)

James Odom to become Space Station leader

James B. Odom will assume the duties of associate administrator for Space Station at Headquarters, according to NASA Administrator James C. Fletcher.

Andrew J. Stofan, who has held the position since 1986, recently announced that he will leave the agency on April 1.

Odom will leave his job as director of Science and Engineering at Marshall Space Flight Center, a

position he has held since November 1986. Prior to that, he was manager of the Hubble Space Telescope project.

At Marshall, Odom has held various engineering and technical management positions. He was actively involved in the development of Earth satellites and unmanned space probes prior to his assignment as chief of the Engineering and Test Operations Branch

for the second stage of the Saturn launch vehicle. In 1972, he was appointed manager of the External Tank project in the Space Shuttle Projects Office. In 1982, he became deputy manager for production and logistics in the Shuttle Projects Office. He became manager of the Space Telescope Office in 1983.

Odom began his engineering career with the Chemstrand Corp.,

Decatur, Ala. In 1956, he joined the U.S. Army's rocket research and development team at Redstone Arsenal, Ala., as a systems engineer and transferred to Marshall in 1959, prior to its formal establishment in 1960.

Odom attended Troy State College and Auburn University, earning a bachelor of science degree in mechanical engineering in 1955.

Second jetliner to ferry Shuttle

NASA plans to acquire a Boeing 747-100 jetliner to serve as a second Shuttle Carrier Aircraft (SCA) for the National Space Transportation System.

NASA has signed a letter contract with Boeing Military Airplane Co., to reserve the aircraft for NASA use. The additional SCA will provide increased ferrying capability and eliminates a potential single-point failure in the NSTS.

The 231-foot-long aircraft will be modified to carry Shuttle Orbiters from landing sites to Orbiter processing facilities at Kennedy Space Center. Modifications will be made by Boeing at its manufacturing facilities in Wichita, Kan. The 747-100 is nearly identical to the original SCA, and was selected to minimize modification and operation costs.



SWEEP, SWEEP, SWEEP YOUR BOAT—Rather than be up the creek without a paddle, two Diversified Management Services employees make use of a landlubber's tool to get around one of JSC's ponds. Dan Alexander (front) and Paul Spoor made their recent voyage to retrieve an aeration pump for repair.

Space News Briefs

Train carrying solid motors in wreck

A train carrying Space Shuttle solid rocket motor segments for the STS-26 mission was involved in an accident with an automobile March 10 near Biloxi, Miss. Two people in the automobile died as a result of the collision. The identities of the victims were not immediately available. The appropriate authorities were investigating. There was no apparent damage to the flight hardware, and the train resumed its journey to Kennedy Space Center. Procedures were being developed for inspecting the hardware upon arrival at KSC.

Peralta gets NASA management post

Manuel (Manny) Peralta has been appointed associate administrator for management at Headquarters. He had been acting associate administrator since April 28, 1987. Before joining NASA, Peralta was a senior executive with Exxon responsible for the implementation of world-wide capital projects and Exxon's European Engineering Office.

Bulletin Board

JAIPCC '88 minisymposium is March 17

A Joint Applications in Instrumentation, Process and Computer Control minisymposium is being co-sponsored by the local sections of the IEEE and the ISA from 9 a.m. to 4:30 p.m. March 17 at the University of Houston—Clear Lake. Presentations will look at Adaptive System Controls/Remote Sensing for industry and space. For registration information call Bill Smith, 479-9705, or Max Turner, 488-9565.

NASACOMM meeting scheduled March 24

NASACOMM, a Commodore user's group, has scheduled its next meeting at 7:30 p.m. March 24 at the Harris County Park Building, 5001 NASA Road 1. Anyone interested in Commodore computers is invited to attend. For more information call Bill Moore, 335-6251, or x53462.

AIAA hosts lunch and learn meeting March 24

The AIAA Space Systems Technical Committee will host a lunch and learn meeting from 11:30 a.m. to 12:30 p.m. March 24 in the Bldg. 3 cafeteria. Larry Griffen of Griffen & Associates, Inc., will discuss "Starport: A Commercial Space Center for Houston." For more information call Michael Laible, 282-2785 or Andre Sylvester, x31537.

Military Officers Wives to meet March 29

The Bay Area Military Officers Wives Club will meet at 11 a.m. March 29 in the Gilruth Center. The speaker will be Karleen Koen, author of "Through A Glass Darkly". Wives of active duty and retired military are welcome. Lunch reservations must be made by noon, March 24. For more information or to make reservations call Mae Nickerson, 337-1054.

JSC hosts safety seminar on April 1

The American Society of Safety Engineers, Gulf Coast chapter is sponsoring a one-day safety seminar on April 1 at the Gilruth Recreation Center. Jay H. Greene, chief of JSC's Safety Division, will be the keynote speaker. Discussion topics will have an impact on JSC's hazard communication program and operations. Safety representatives and those involved in handling and use of hazardous chemicals are recommended to attend. The \$30 fee includes lunch; tickets at the door will cost \$40. Registration and payment must be received before March 25. To register call x36369 or x36370.

EAA sponsors Bluebonnet festival on April 9

The Employee Activities Association is sponsoring a Bluebonnet festival and photo expedition on April 9. Festivities include a Bluebonnet festival at Chapel Hill, a Washington on-the-Brazos state park visit, a tour of the Star of the Republic museum, and a visit to the St. Clare Monastery Miniature Horse Ranch. Tickets are on sale in Bldg. 11 through April 1. Departure will be from Parking Lot J-2 at 8:30 a.m., and return will be at 5:30 p.m. For more information call, x35350.

Management Experience Day planned April 27

The JSC chapter of the National Management Association (NMA) will conduct its first "Management Experience Day" for 24 seniors and four teachers from local high schools. NMA needs NASA managers and supervisors to volunteer to host a student or teacher between 1 and 4 p.m. April 27. Participants will accompany their hosts during all of the afternoon's activities. Persons interested in hosting a student or teacher should call Faith Vilas, x35056.

Correction

The Roundup incorrectly reported scholarship contacts and deadlines in its Feb. 26 issue. Applications for NASA College Scholarship Fund scholarships may be obtained from Mary O'Connell in Bldg. 1, Rm. 840 and must be submitted by March 25. Applications for JSC EAA Scholarships may be obtained from Avis Nettles in Bldg. 1, Rm. 805. For more information call O'Connell at x39168, or Nettles at x30599.

Gilruth Center News

Call x30304 for more information

EAA badges—Dependents and spouses may apply for photo I.D. badges between 6:30 and 8:30 p.m. March 22.

Defensive driving—Course is offered from 8 a.m. to 5 p.m. March 26 or April 16 and costs \$20.

Weight safety—This is a required course for those employees wishing to use the Rec Center weight room. The class will be March 24. The cost is \$4.

Physical fitness—The next 12-week course of the JSC Physical Fitness Program will be April 4 to June 24 from 11 a.m. to noon or from 4 to 5 p.m. All NASA and contractor employees and dependents are eligible upon completion of an acceptable physical exam and a maximal treadmill stress test. For more information call x30301.

Tennis—Tennis classes begin March 21 and will meet every Monday from 5:15 to 6:45 p.m. for 6 weeks. Cost is \$32.

Scuba—Scuba classes begin March 21 and will meet every Monday and Wednesday from 7 to 9 p.m. for six weeks. Initial fee is \$45; \$80 will be due at first class.

Country & western dance—Dance classes begin March 21 and will meet every Monday for six weeks. An intermediate class will meet from 7 to 8:30 p.m.; a beginners class will meet from 8:30 to 10 p.m.

Men's Open C Softball Tournament—The tournament is March 26 and is limited to the first eight teams. The entry fee is \$95 and the entry deadline is March 23.

Abbey gets Office of Space Flight job

Effective immediately, George W. S. Abbey will assume the duties of deputy associate administrator for the Office of Space Flight at Headquarters.

Abbey moves to Washington, D.C., from JSC, where he has been special assistant to JSC Director Aaron Cohen since November 1987. Prior to that, he had been Director of Flight Crew Operations.

Abbey began his NASA career in 1967 as technical assistant to the manager of the Apollo Spacecraft Program and in December 1969, he became technical assistant to the Center Director. In January 1976, he was named Director of Flight Operations, where he was responsible for operational planning and for overall direction and management of flight crew and

flight control activities for all manned space flight missions. He remained in this position until 1983 when he became Director of the newly formed Flight Crew Operations Directorate, where he continued to be responsible for all Space Shuttle flight crews and center aircraft operations.

Born Aug. 21, 1932, in Seattle, Abbey received a bachelor's degree in general science from the U.S. Naval Academy in 1954 and a master's degree in electrical engineering from the Air Force Institute of Technology in 1959. As a pilot in the U.S. Air Force, he had over 4,000 hours in jet, reciprocating and rotary wing aircraft. Being detailed to JSC in November 1964, Abbey resigned his Air Force commission in April 1967.

Abbey's numerous honors and awards include the NASA Exceptional Service Medal (1969); the Medal of Freedom, as a member of the Apollo 13 Missions Operations Team (1970); and two NASA Distinguished Service Medals (1973 and 1981).

In making this announcement today, Rear Adm. Richard H. Truly, associate administrator for Space Flight, said, "George Abbey brings to the Office of Space Flight a long experience of working on some of NASA's most difficult missions and programs. His addition to NASA Headquarters is another positive step in adding strength to our space program as we approach the next flight of the Space Shuttle and move on to more challenging missions in the future."

19th lunar, planetary meeting opens Monday

Almost 700 scientific and technical papers will be presented at the 19th Lunar and Planetary Science Conference at JSC March 14 through 18.

Concurrent sessions begin each morning at 8:30 a.m. in the Gilruth Recreation Center. The conference will have 27 technical sessions and one evening special session. A total of 696 papers will be presented.

Session topics cover geology and geophysics of Mars and Venus, planetary impact cratering; and meteorites, asteroids and comets. The evening special session on March 15 will focus on noble gases and solar system history.

Sessions include: Mars Geology and Remote Sensing, 8:30 a.m. March 14; Orbital Collection of Cosmic Dust, 1:30 p.m. March 14; Exploring Mars and Phobos, 5 p.m. March 14; Venus Geophysics, 8:30 a.m. March 15; Geology of Venus, 1:30 p.m. March 15; Remote Sensing of Planetary Surfaces, 8:30 a.m. March 16; Lunar Highlands, 8:30 a.m. March 17; and Asteroids/Comets, 8:30 a.m. March 18.

Crew escape pole works for jumpers

(Continued from page 1)

25,000 feet, a crew member would vent the crew module to ensure that no pressure differential existed prior to hatch jettison. The side hatch would then be pyrotechnically jettisoned at approximately 22,000 feet, and crew escape would begin. A crew of eight could nominally egress in less than two minutes.

The telescoping pole was designed and manufactured by JSC engineers and technicians, and the test manager, Bill McMullen, was systems engineering manager in the Structures and Mechanics Division. The Navy has provided the parachutists to test the prototype pole, and the Air Force has provided the C-141 and its crew for the tests.



JSC Photo

JSC Director Aaron Cohen makes radio contact with Lewis Research Center's new Amateur Radio Club station as members of the Johnson Radio Club look on.

Center directors hit airwaves

Inaugurate bicentennial call sign

By Chuck Biggs

The Johnson Amateur Radio Club was the first station to make radio contact with the Lewis Research Center's new Amateur Radio Club after the assignment of a special call sign by the Federal Communications Commission.

JSC Director Aaron Cohen, from the JSC station, Goddard Director John Townsend, from his home station, and the Goddard Club station, were on the air to inaugurate the new Lewis club station with Lewis Director Dr. John Klineberg at the mike. Although not a "ham," Cohen informed the other participants in true ham operator fashion that "we are enjoying a beautiful spring day here in Houston."

Contact was made using a new call sign commemorating the 200th anniversary of the signing of the U.S. Constitution. The new

station's call sign, AK200Y incorporates the number 200 in place of the single digit normally used. The Lewis club asked the Johnson club to be its first radio contact.

Almost all of the equipment in both the JSC and Lewis stations is surplus land-and-recovery radio equipment from the Gemini era. During the four-way contact, Klineberg explained that the station actually was a "Jupiter" trailer that originally housed electronic equipment for the old Redstone rockets in Turkey.

After the center directors made the inaugural contact, hams around the world vied for an opportunity to talk to one of a limited number of stations with the unique bicentennial call sign.

By the end of its second day of operation, the Lewis club's new station had contacted more than 400 stations.

NASA looks for lease in space

NASA is seeking offers to lease, to the U.S. government, useable volume and related services in a commercially developed space facility before the end of fiscal year 1993.

The facility would be deployed, checked out and serviced periodically on orbit by Space Shuttle crews. It would contain a crewed, shirtsleeve work space and be able to operate in an untended, free-flying mode, providing a micro-gravity environment for four to six months. At least 30 percent of the facility would remain available for commercial use.

The open competition will be managed by Marshall Space Flight Center. Actual lease terms and conditions will be negotiated and will be subject to the future availability of appropriated funds and necessary authorizations.

In a related development, NASA

recently announced the establishment of a Commercial Development of Space Industry Advisory Group and the selection of Edward Donley, former Chairman and CEO of Air Products and Chemicals, Inc., as the chairman.

The new group will be a subcommittee of the NASA Advisory Council and will function within NASA's formal advisory committee structure with emphasis on the commercial use of space.

It will review the overall NASA program for the commercial development of space and recommend changes it believes will contribute to enhancing the program and NASA's ability to achieve program objectives.

Through the NASA Advisory Council, the new group also will advise NASA on specific program elements, both current and proposed, aimed at fostering the commer-

cial development of space, including:

*Research priorities from the viewpoint of potential commercial applications.

*Research data base structure and accessibility for optimum industry use.

*Research facilities and hardware that would most effectively stimulate commercial space endeavors.

*NASA-industry arrangements and agreements that enhance national policy objectives.

"We are extremely pleased and consider ourselves fortunate to have an industry executive of Mr. Donley's caliber to head this new group," said James T. Rose, NASA Assistant Administrator for Commercial Programs. "His extensive knowledge of business and understanding of the global competitive challenge America faces will be of valuable assistance to NASA."

Aerospace Research Information Network



Patrons who use ARIN to search for highly specialized science and technology literature will see the results of their searches on computer display terminals such as this one.

JSC technical library collection boards agencywide network

By Beverly Green

Have you ever launched a research project only to find that acquiring highly specialized literature is no easy task? JSC researchers can now look forward to using an agencywide system that will link NASA Libraries to search for specialized materials in science and technology.

The fully on-line Aerospace Research Information Network (ARIN) will be a library materials management system integrating the public access catalog, cataloging, circulation, acquisition, serial management and management information functions. It is expected to be in full operation in two or three years, said Ginger Darnell, Management Documentation Branch chief.

"The function that will be used by library patrons is the public access catalog which will provide patrons with the ability to search and retrieve information on books documents, or serials held by NASA," said Darnell. "Help screens and prompting messages will enable the patron to move quickly through each stage of his search and one may then print out a research list," she said.

The idea of ARIN was first introduced in 1982 by the Scientific and

Technical Information Branch (STIB) at Headquarters to the Agencywide Information Management Council as an opportunity to offer improved services for agency libraries.

Since that time a NASA scientist or engineer has been permitted to access NASA library holdings from local workstations. The STIB and the ARIN Steering Committee made up of center representatives have been planning the approach for implementing this network at all NASA libraries, said Darnell, JSC's representative for the ARIN Steering Committee.

The JSC library collection includes approximately 65,000 books, 17,000 journals, 840,000 microfilmed technical reports, 230,000 hardcopy technical reports, 3,400 classified documents and 403 subscriptions.

"A mini-data base of about a quarter of our book records at JSC has been loaded into ARIN and the library staff is currently checking the entries for accuracy," said Laura Chiu, lead librarian. "We hope to complete the entries of our book collection by September, however, JSC's collection is approximately one tenth of the title holdings that

will be available through the ARIN system," she added.

Once JSC's book collection is on board, the journal collection and document collection will be input. The Rice University library's NASA archival collection, which includes documents, memos and reports of manned space programs from Apollo, will also be included in the system.

"More than 5,000 active patrons check out materials from the library. There are other professionals that use only the research capability of the library, but the system will be easy to learn for the entire user community."

—Martin McDonough

RECON, an on-line database of approximately 3 million scientific and technical documents, is being incorporated into the ARIN system and can now be accessed through ARIN terminals. "Although this ARIN program has been designed to be friendly, short training classes will be available for researchers," said Martin McDonough, technical monitor, who has served JSC researchers for 24 years.

"More than 5,000 active patrons check out materials from the library. There are other professionals that use only the research capability of the library, but the system will be easy to learn for the entire user community," McDonough added. For instance, by using Boolean search techniques, relate to keyword searching, bibliographic information, copy and volume holdings, acquisitions processing, and circulation status information can be displayed to the patron.

Four personal computer workstations have been installed and connected to ARIN at JSC's technical library, and there are plans to add four more in the future. "The library will serve as liaison for inter-library loans and will continue

professional assistance in researching," said McDonough.

ARIN applications software and data files reside in a central location at the NASA Scientific and Technical Information Facility (STIF) in the Baltimore/Washington International Airport area. ARIN processing is performed on an IBM 4381 computer under the OS/MVS operating system.

Several years ago, a team of NASA representatives reviewed available commercial software packages against design requirements and selected a university-supported package known as NOTIS (Northwestern Total Integrated Library System), said Darnell.

"Additional applications over the next five years may provide computer access to the ARIN system from one's office," said Darnell.

Other long term benefits that may stem from ARIN applications include a more specialized collection of materials for each library. "Once ARIN is on board completely, the library may continue expanding its collection in areas such as aerospace medicine and highly specialized information supportive of testing spacecraft and manned missions," said Chiu.



Above, Information Specialist Doris Reid assists patron Sivaram Arepalli, an engineer in the Structures and Mechanics Division.

At left, Technical Monitor Marty McDonough and Lead Librarian Laura Chiu peruse guidelines for ARIN implementation.

Roundup Swap Shop

All Swap Shop ads must be submitted on a JSC Form 1452. The forms may be obtained from the Forms Office. Deadline for submitting ads is 5 p.m. the first Wednesday after the date of publication. Send ads to Roundup, AP3, or deliver them to the Newsroom, Bldg. 2 Annex, Room 147. No phone in ads will be taken.

Property & Rentals

Sale: University Trace townhouse, 2-2.5-2, appliances, FPL, security system, take over loan. 333-4044.

Sale: Acorn Hill Estates, east Huntsville, \$3,000 per acre, assume 8.5% note. 333-4044

Sale: Rayburn Country lot, 90' x 200', near golf course and marina, \$11,000. Ora, 645-0008.

Lease: Lake Livingston waterfront, 3-2, furnished, pier, fishing, skiing, swimming, weekend and weekly rates. 482-1582.

Sale: Algoa/Santa Fe, 1.5 acre, well, septic, drive, electricity, water purifier, shed, \$13,500. Linda, x33844 or (409) 925-4862

Lease: '85 mobile home, 35', weekly rates. 337-4051.

Sale: Big Bend area, 160 acres, \$70 per acre. 337-4051.

Lease: Galveston-Jamaica beach marina house, sleeps 8, central air, water, \$50 per day, min. 2 days, \$20.00 service fee. 337-3970 or 280-2493.

Lease: NASA 1 & El Camino, 2-story townhouse, 2-2.5-1, FPL, 1,500 sq. ft., garage w/ opener, pool, \$495/mo. x37008 or 452-3361.

Lease: Nassau Bay townhouse, 2-2.5, microwave, fans, W/D connections, carport, pool, \$600/mo., deposit, available May 1. x32864 or 335-1695.

Lease: West Galveston beach house, 2-2, marina w/pool, \$500/wk., weekend rates available. Fendell, x31206 or 538-1147.

Sale: LaPorte, Fairmont Park, 3-2, converted garage, new carpet, vinyl flooring, 10.5% interest, FHA assumable, \$700/mo. Gail x30669 or 470-9234.

Lease: El Dorado Trace, furnished condo, 1 BR, study, 1-1/3 baths, color TV, appliances, W/D, linens, dishes, pools, jacuzzi, exercise room, tennis courts. 488-7038 or 282-6422.

Rent: New Orleans, French Quarter, Greek revival townhouse, furnished, antiques, private sundeck, skyline/river view, available Jazz Festival Week, April 22 - 29. 282-6422 or 488-7038.

Sale: Pearland, Smi-Custom home, 3-2-2, landscaped, fenced, storm windows, miniblinds, drapes. Mo, 280-1743 or 997-1259.

Lease: CL/Ellington, 2 BR, pool, day care, \$350/mo. Eric, x38420.

Sale: Friendswood, 3-2-2, cathedral ceiling, covered patio. 482-3697.

Lease: League City, duplex, 3-2.5-1 or 2-2.5-1, W/D, refrig., fans, fenced pool, tennis court, \$595/mo. Joni, 480-3377.

Lease: Tranquility Lake, 1 BR condo, private lake, jogging trail, electronic gates, covered parking, W/D, no frost refrig. w/ice maker, microwave, FPL, pools, \$300/mo., \$200 deposit. x34034.

Lease: Friendswood, 14' x 56' mobile home, 2-1, \$250/mo., \$150 deposit. 482-6512.

Lease: Galveston, Victorian condo, sleeps 6, furnished, weekend and weekly rates. 280-8644.

Sale: 3-2-2, Offenburger, 15,000 sq. ft., mini blinds, fans, custom kitchen, energy effi., 20' x 20' deck. 488-0946.

Lease: Crystal Beach, sleeps 8, AC, furnished except linens, \$550/week, \$275/weekend, families only. M. Edwards, 282-4017 or (409) 684-5827.

Sale: Friendswood, wooded lot, cul-de-sac, near shopping, schools, \$16,900 or \$195/mo. 488-3224.

Sale: League City, 3-2-2 brick home, will sell equity for mobile home and lot, clear and free. Jim, x38321 or 334-4631.

Sale: Cape Conroe, large lot, trees, utilities, country club has pool, tennis court, boat ramp, \$6,500 OBO. James x34765.

Sale: Seabrook, Seascape subdivision, 3-2-2 brick house, new carpet, oven, vinyl siding, fenced, access to boat dock, tennis courts, \$51,000 OBO. Susan, 280-8006.

Lease: Victorian condo overlooking Galveston bay, sleeps 6, furnished. 480-5270.

Cars and Trucks

'80 Mazda 626, 2 dr., 5 spd., low miles, AC, AM/FM, blue, \$2,400 OBO. Les, x38506 or 333-4029.

'84 Porsche 944, 47K mi., auto., power sun roof, window tint, custom mats, AM/FM/tape, paint protection, \$14,500 OBO. 474-4871.

'67 Mustang GT, V8/289 fastback, 1 owner, new transmission, clutch, timing chain, carburetor, drive shaft, starter, battery, electrical, manual, \$3,000. Ruben x39375 or 683-8389.

'78 Mercury Cougar XR7, 351 C.I.D., loaded, needs new paint, \$700. Ruben, x39375 or 683-8389.

'82 Nissan Stanza XE, hatchback, 5 dr., 2L, 4 cyl., 5 spd. man., A/C, gauges, AM/FM, 4 spkr. stereo, 113K mi., \$2,200 OBO. Greg 482-6991.

'86 Monte Carlo SS, loaded, T-Tops, AM/FM/tape, \$2,500 down, take up notes. Michelle, x31165.

'80 Camaro, white, T-tops, 3K mi., rebuilt engine, AM/FM/tape, PB, PS, A/C, rally wheels, maintenance records, \$2,950. Dean, 482-7138.

'78 Olds 88, auto., AC, AM/FM, good mechanical cond., \$950. 474-3489.

'79 Ford LTD Landau, maroon, electric seats, windows, \$1,995. Parker, 483-0974

'84 Nissan Sentra, 5 spd., 2 dr, A/C, PB, AM/FM, brown, \$4,500 OBO. 282-3494.

'69 Plymouth, good cond., \$490. 483-4727.

'84 GMC S15 PU, 4 x 4, long bed, PS, PB, V6, 5 spd., good tires, low miles, \$4,495 OBO. Pat, x39377 or 333-4214.

'80 Datsun 280ZX sports coupe, blue/silver, mag wheels, PW, AM/FM/tape, \$3,700. 486-4635.

'80 Olds Cutlass Supreme, 2 dr., 70K, V8, \$2,900 OBO. Rick, x36156 or 480-1218.

'78 Pontiac Bonneville, white, 4 dr., PS, PB, AC, 350 engine, 65K mi., \$1,500 OBO. Paul x37736 or 488-1028.

'85 Merkur XR4-II, 36K miles, sun roof, ex. cond., \$11,000. 532-2374.

'75 Ford Ltd, 2 dr., good cond., \$300. Jim, x38321 or 334-4631.

'73 Chev Cheyenne C-10 PU, 1/2 ton, AT, PS, PB, A/C, AM/FM/tape, 2 new Michelin tires, good cond., some rust, service manuals, 140K mi., \$1,300, original owner. John x31056.

'84 Chrysler New Yorker, 413 ci engine, good mechanical cond., great acceleration, auto., AM/FM/tape, \$6,000. Peter, x38856 or 480-7917.

'72 Cadillac Sedan Deville, 56K mi., dark brown, cream vinyl top, new tires, orig. paint, \$3,000. 473-4102.

'79 Chev Monte Carlo, 51K mi., V8, cruise control, tilt steering, good cond., \$1,350. 644-0315.

'85 Plymouth Reliant, 4 dr., auto., AC, AM/FM, tilt steering wheel, new tires, \$3,200 OBO. Bob, x32193 or 332-3817.

'67 Mustang, 3 spd., 289-V-8, new paint, AM/FM, good tires, air shocks, headers, good cond. \$2,995. Michael, x38169 or 482-8496.

'86 Pontiac Firebird, 305 V8, 4 bbl carb., 5 spd. manual, cruise, A/C, AM/FM/tape, \$7,800/Lea Anne, x31598 or 486-6762.

'32 Silver Streak travel trailer, auto., AC, furnished, ex. cond., Radro TV antenna, \$10,500. 534-4027.

'80 MGB, 49K mi., red, new paint, needs top, good cond., \$3,000. Wave, x31695 or 748-2726.

'53 MG/TD, British racing green, needs refurbishing. Morrison, x35039.

'85 Suzuki FA-50 moped, 350 mi., ex. cond., full-faced Fulmer helmet, \$2,500. 331-8079.

'85 Suzuki FA-50 moped, 350 mi., \$300. Greg, 280-7341 or 488-5015.

Honda Hawk 400, auto., 15K mi., \$350. Brent, 282-3479.

'86 Suzuki ALT 125, 5 spd., 3 wheel, all terrain vehicle (ATV), new, \$650. Bauch, 333-3382.

'80 Suzuki 1000, needs work. x30035 or 544-4710.

'81 Yamaha XJ750, shaft drive, 11,700 mi., \$1,300. Richard, 486-7526.

'78 Suzuki GS550, new engine, needs parts, \$250. Chris, x30225.

'74 Yamaha 650 SE, 10,500 actual mi., needs tuneup, throttle cable and battery, \$300. 484-7274.

Trek 400 series racing bicycle, good cond., \$275. Steve, x35272.

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Audiovisual & Computer

Turbo IBM/XT compatible computer, 640K RAM, (2) 360K disk drives, amber monitor; Panasonic NLQ dot matrix printer, ex. cond., \$625. Scott, x38597 or 544-6554.

Cannon PW-1080A printer, ex. cond., was \$449, now \$175 OBO. 332-0047.

HP-12C programmable financial calculator, \$50. 332-0047.

Gemini 10X printer, \$200. Jeff, x32725 or 532-1643.

Apple IIE/128K, monitor, 2 drives, system saver, Grappler + printer interface, \$600. 334-1934.

IBM PCjr w/color monitor, Tecmar Jr Capt, 640KB RAM, V20 processor, 2 disk drives, creative firmware, Jr serial port adapter, 2 joysticks, 2 keyboards, Dos, Basic, manual, extras, \$750. Dave, 996-1105.

Hayes 300 Baud modem and original VIP terminal s/w and documentation for Tandy color computer, \$85. Doc Pepper, 282-3130.

Commodore 64, CPU, disk drive, ex. cond., \$250. 488-1444.

Commodore 64, CPU \$100. 488-1444.

Star-Gemini SG/10 Dot Matrix printer, prints graphics and near letter quality, ex. cond., \$145; Commodore 64 joystick, \$15. Manny x37333 or 681-4126.

Commodore 65 software, books, Basic compiler. Steve x35272.

IBM PC-XT, 10MB hard disk, 2 floppy drives, color monitor, graphics card, enhanced keyboard, panasonic printer, power filter, Wordstar IV, Lotus 1,2,3, Autocad, Turbo Pascal, DBase III+, \$2,200. Wave, x31695. or 748-2726.

Hayes 1200 internal modem for IBM, Smartcom II software included, \$150. 486-7849.

Aston Tate's DBase for Macintosh, new, \$200. Susan, 280-8006.

HP Ditgital cassette drive, HP-IL interface module, \$350. OBO. Carlos, x38879 or 554-7727.

AT&T monochrome screen, ex. cond., \$100. 331-6260.

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Want a cheap electric washer, looks don't matter, needs to run good. 480-2817.

Want drummer/percussionist experienced in performing jazz, rock, pop 50's rock and rock, must be able to support weekly rehearsals and scheduled events. 488-6141.

Want roommate to share large 3-2-2 house in CLC, 10 mins. from JSC, non smoker, 1/2 utilities, \$300. x30692 or 486-5246.

Want roommate(s) to share 3-2 home in Friendswood, W/D, cable, microwave, household privileges, non smoker, all bills paid, \$245/mo. Michael, 483-8169 or 482-8496.

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Canon 35mm camera lens, FD 50mm F1.8, new \$35. Steve, x35272.

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Jansen piano, great sound, ex. cond., \$950 OBO. Paul, x37736 or 488-1028.

Normandy clarinet, \$140. Parker, 483-0974.

Wurlitzer Spinnet organ, 2 keyboards synthesizer, rhythm keys, cassette recorder, ex. cond. 333-2147.

Baldwin organ and bench, "The Fun Machine", 2 keyboards, 13 pedals, new, \$950. Tom Clark, 483-9842.

Spencer flute, closed hole, concert, used one year, case, ex. cond., \$190. 488-6521.

King Cleland alto saxophone, good cond., new case w/swab, neck strap, reed guard, mouthpiece, lyre, \$450. Laura, x34249 or 488-9721.

Buffett clarinet, good quality, good cond., \$400. x38278 or 326-2995.

Aston Tate's DBase for Macintosh, new, \$200. Susan, 280-8006.

HP Ditgital cassette drive, HP-IL interface module, \$350. OBO. Carlos, x38879 or 554-7727.

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